FIG. 1

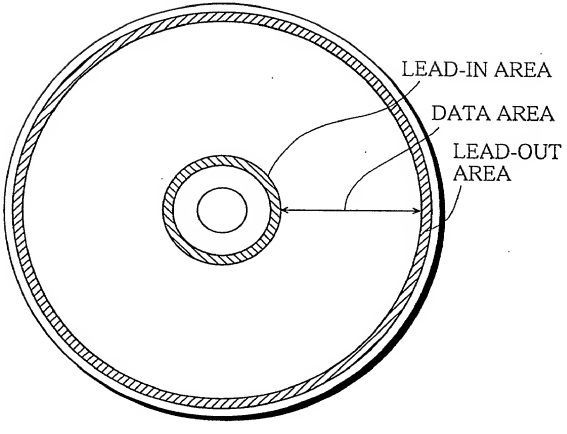

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FIG. 2

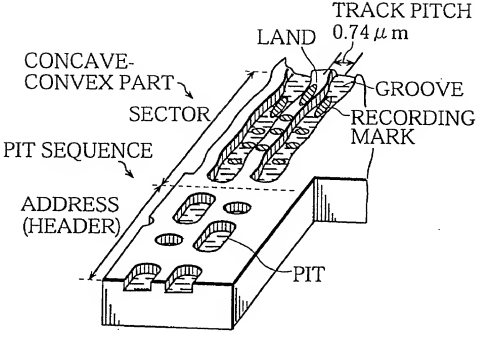

TRACK PITCH
0.74 μm
LAND
CONCAVE-
CONVEX PART
GROOVE
SECTOR
RECORDING
MARK
PIT SEQUENCE
ADDRESS
(HEADER)
PIT

FIG. 3A

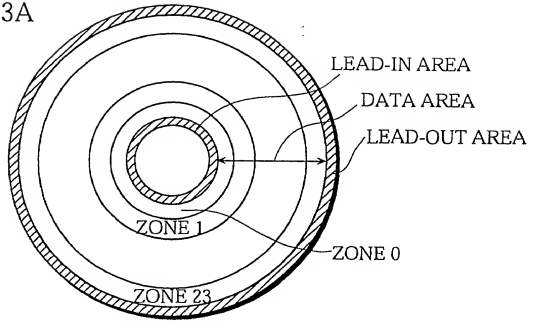


FIG. 3B

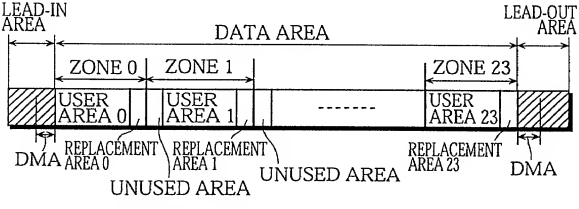


FIG. 3C

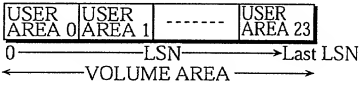


FIG. 3D

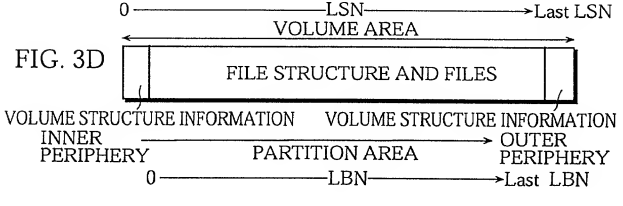


FIG. 4

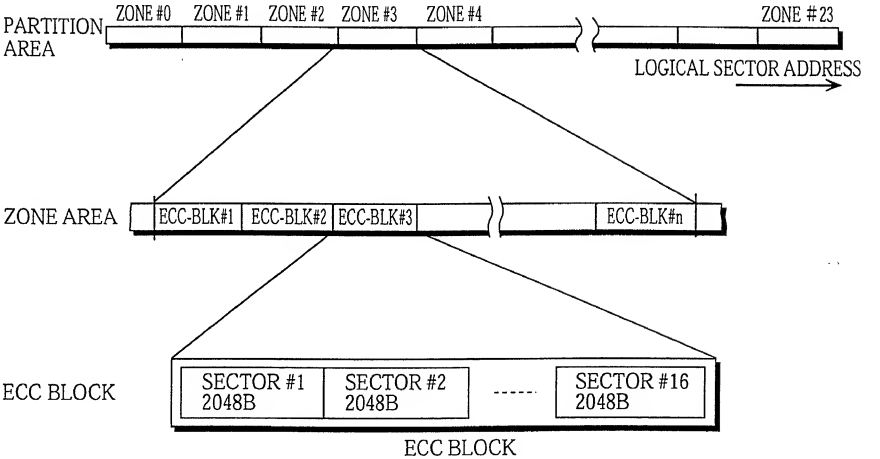

PARTITION AREA
ZONE #0
ZONE #1
ZONE #2
ZONE #3
ZONE #4
ZONE #23
LOGICAL SECTOR ADDRESS
ZONE AREA
ECC-BLK#1
ECC-BLK#2
ECC-BLK#3
ECC-BLK#n
ECC BLOCK
SECTOR #1 2048B
SECTOR #2 2048B
SECTOR #16 2048B
ECC BLOCK

FIG. 5

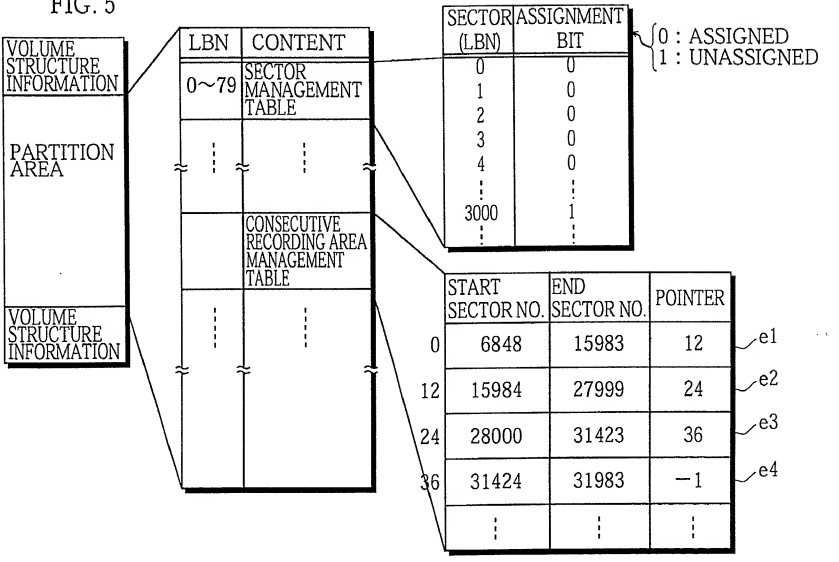

VOLUME STRUCTURE INFORMATION
PARTITION AREA
VOLUME STRUCTURE INFORMATION
LBN
CONTENT
0~79
SECTOR MANAGEMENT TABLE
CONSECUTIVE RECORDING AREA MANAGEMENT TABLE
SECTOR (LBN)
ASSIGNMENT BIT
0 : ASSIGNED
1 : UNASSIGNED
0
1
2
3
4
3000
START SECTOR NO.
END SECTOR NO.
POINTER
0
6848
15983
12
e1
12
15984
27999
24
e2
24
28000
31423
36
e3
36
31424
31983
−1
e4

FIG. 6

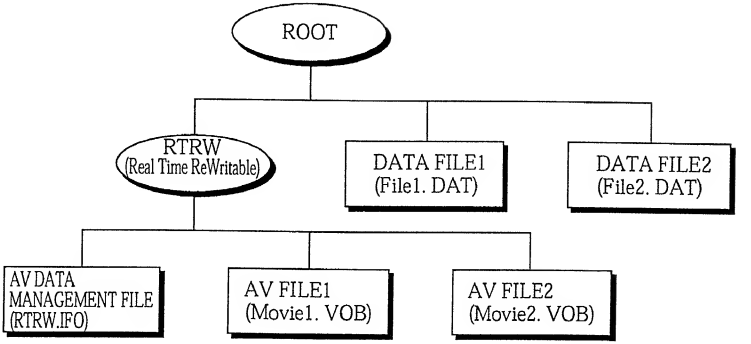

ROOT
RTRW
(Real Time ReWritable)
DATA FILE1
(File1. DAT)
DATA FILE2
(File2. DAT)
AV DATA
MANAGEMENT FILE
(RTRW.IFO)
AV FILE1
(Movie1. VOB)
AV FILE2
(Movie2. VOB)

FIG. 7

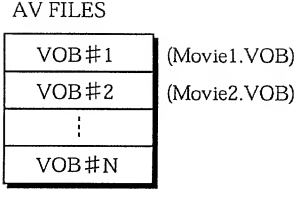


FIG. 8

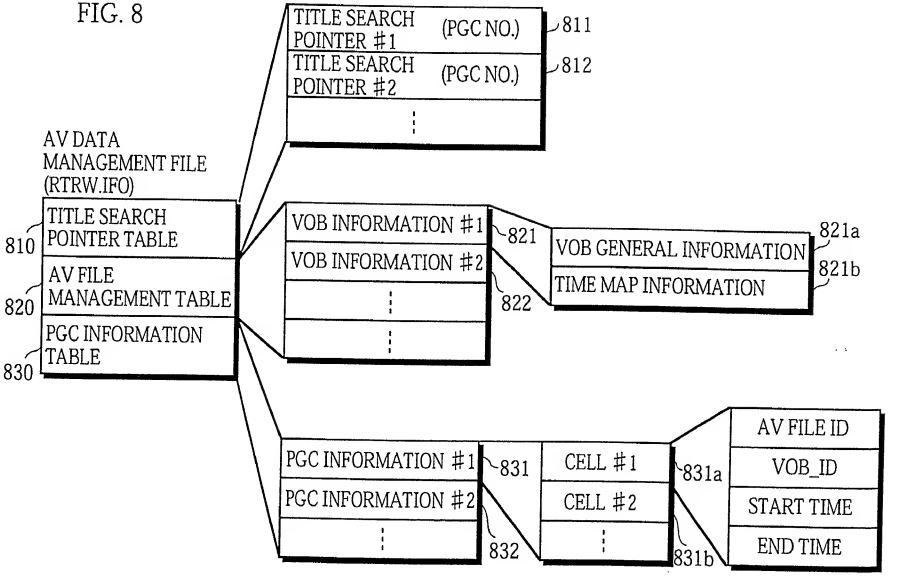
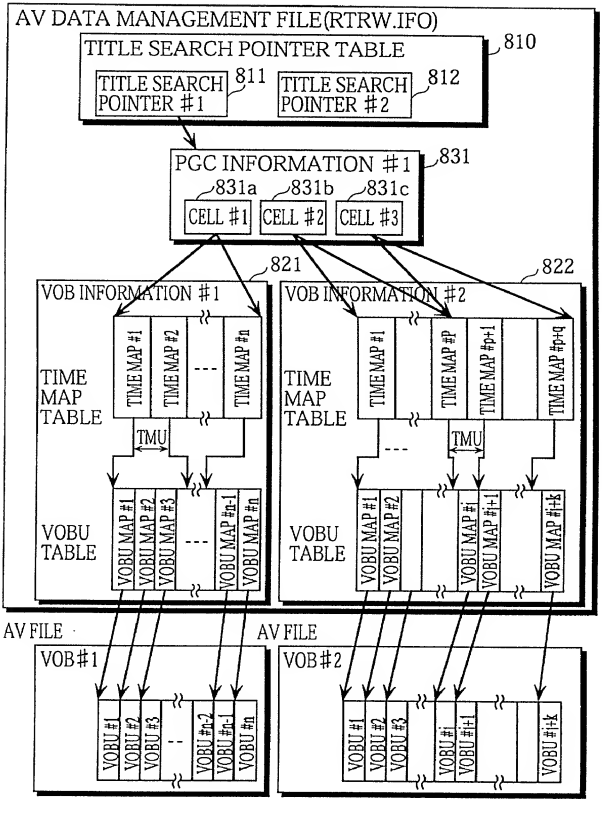

AV DATA MANAGEMENT FILE (RTRW.IFO)
TITLE SEARCH POINTER TABLE
AV FILE MANAGEMENT TABLE
PGC INFORMATION TABLE
810
820
830
TITLE SEARCH POINTER #1 (PGC NO.)
TITLE SEARCH POINTER #2 (PGC NO.)
811
812
VOB INFORMATION #1
VOB INFORMATION #2
821
822
VOB GENERAL INFORMATION
TIME MAP INFORMATION
821a
821b
PGC INFORMATION #1
PGC INFORMATION #2
831
832
CELL #1
CELL #2
831a
831b
AV FILE ID
VOB_ID
START TIME
END TIME

FIG. 9



EP 1 760 720 A1

FIG. 10

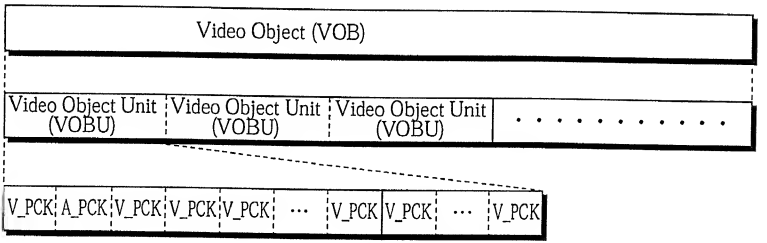
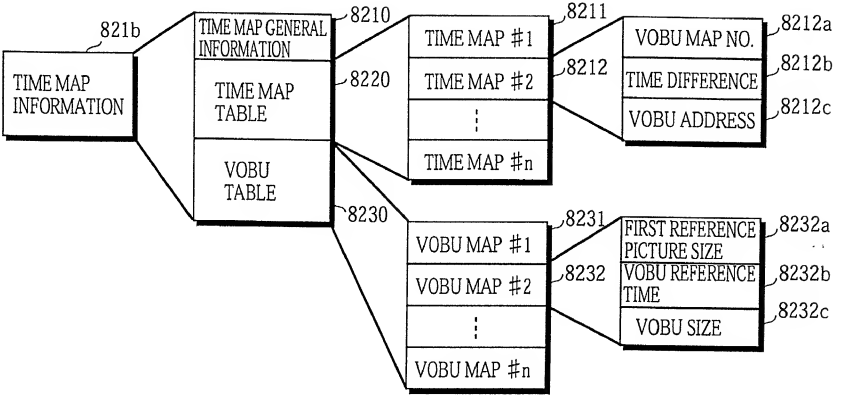

Video Object (VOB)
Video Object Unit (VOBU)
Video Object Unit (VOBU)
Video Object Unit (VOBU)
V_PCK
A_PCK
V_PCK
V_PCK
V_PCK
V_PCK
V_PCK

FIG. 11


821b
TIME MAP INFORMATION
TIME MAP GENERAL INFORMATION
TIME MAP TABLE
VOBU TABLE
8210
8220
8230
TIME MAP #1
TIME MAP #2
TIME MAP #n
8211
8212
VOBU MAP NO.
TIME DIFFERENCE
VOBU ADDRESS
8212a
8212b
8212c
VOBU MAP #1
VOBU MAP #2
VOBU MAP #n
8231
8232
FIRST REFERENCE PICTURE SIZE
VOBU REFERENCE TIME
VOBU SIZE
8232a
8232b
8232c

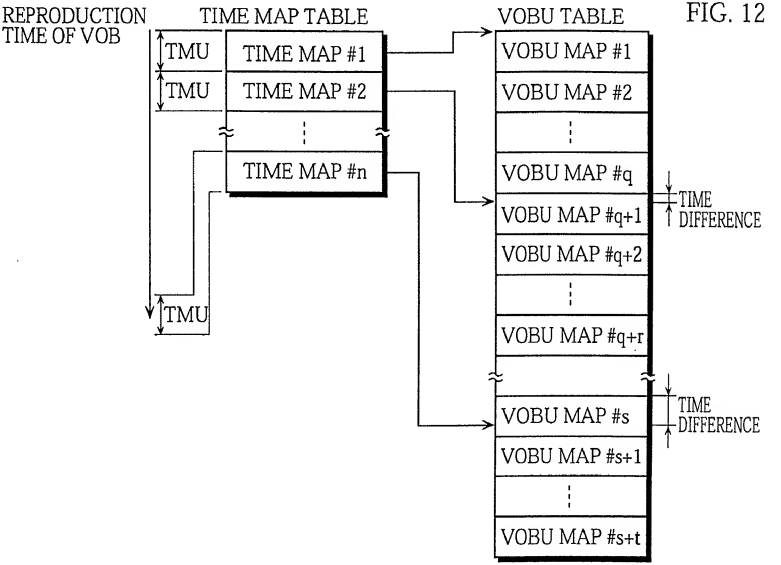
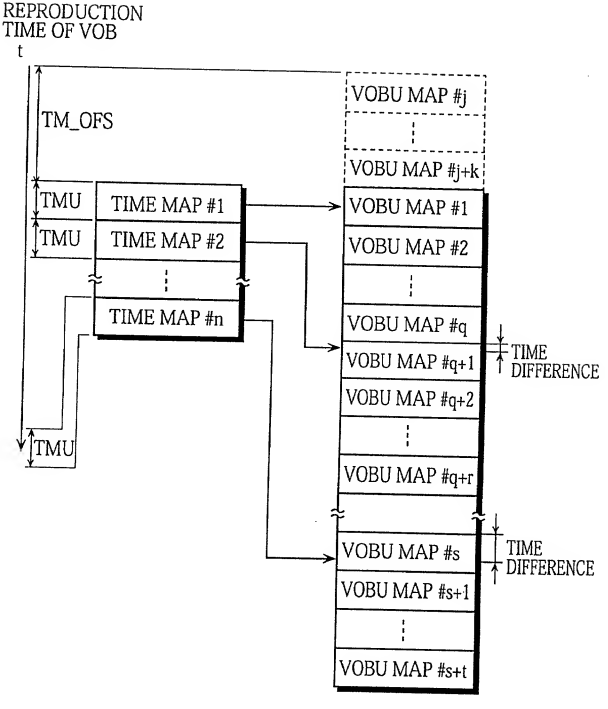

REPRODUCTION TIME OF VOB
TIME MAP TABLE
VOBU TABLE
TMU
TMU
TMU
TIME MAP #1
TIME MAP #2
TIME MAP #n
VOBU MAP #1
VOBU MAP #2
VOBU MAP #q
VOBU MAP #q+1
VOBU MAP #q+2
VOBU MAP #q+r
VOBU MAP #s
VOBU MAP #s+1
VOBU MAP #s+t
TIME DIFFERENCE
TIME DIFFERENCE

FIG. 12

FIG. 13



09910909 "07240T01

FIG. 14

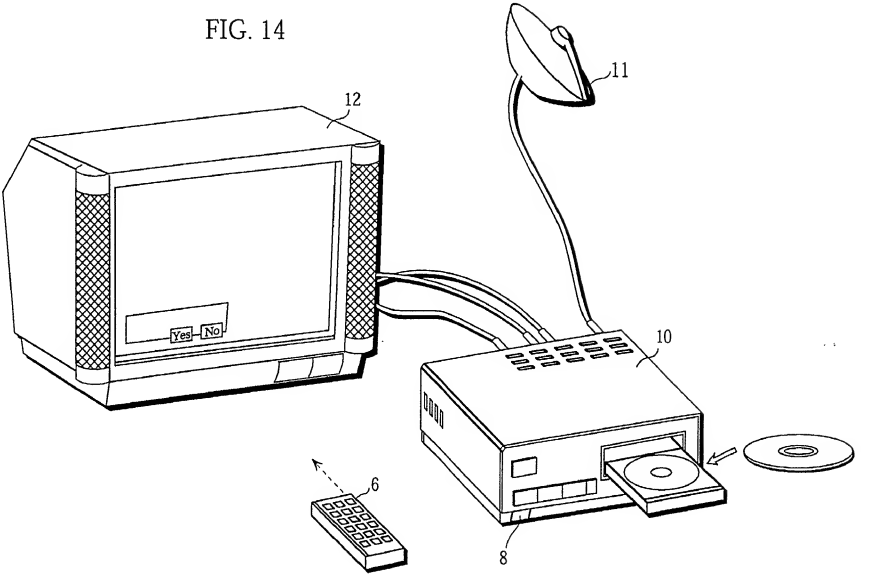


FIG. 15

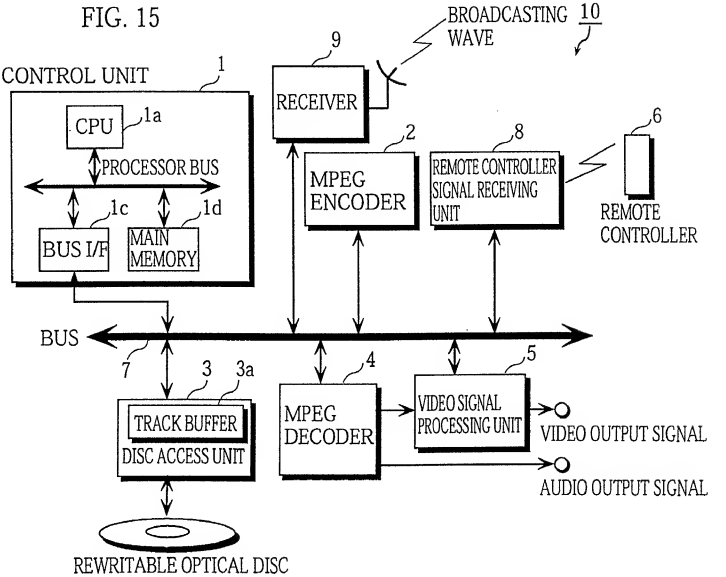
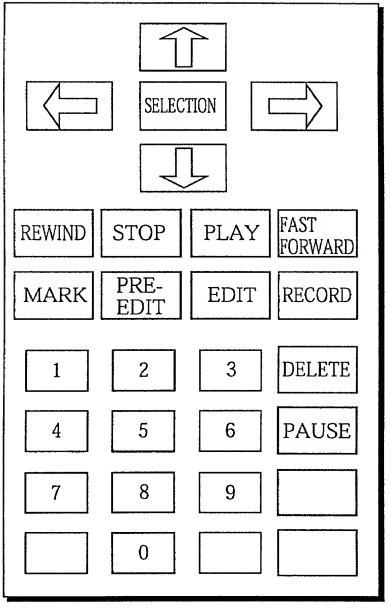

BROADCASTING WAVE
10
9
CONTROL UNIT
1
RECEIVER
CPU
1a
PROCESSOR BUS
1c
1d
BUS I/F
MAIN MEMORY
2
MPEG ENCODER
8
REMOTE CONTROLLER SIGNAL RECEIVING UNIT
6
REMOTE CONTROLLER
BUS
7
3
3a
4
5
TRACK BUFFER
DISC ACCESS UNIT
MPEG DECODER
VIDEO SIGNAL PROCESSING UNIT
VIDEO OUTPUT SIGNAL
AUDIO OUTPUT SIGNAL
REWRITABLE OPTICAL DISC

FIG. 16



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EP 0 720 360 A2

FIG. 17

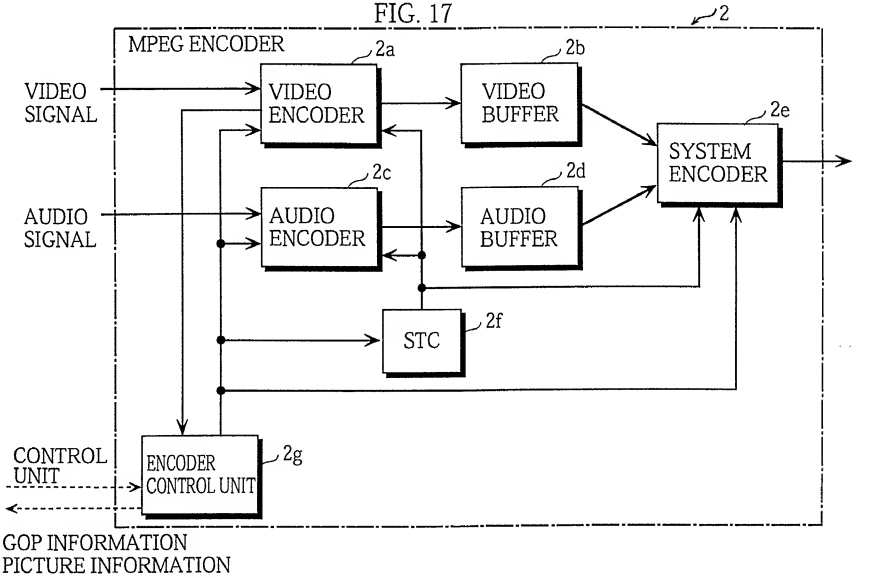


FIG. 18

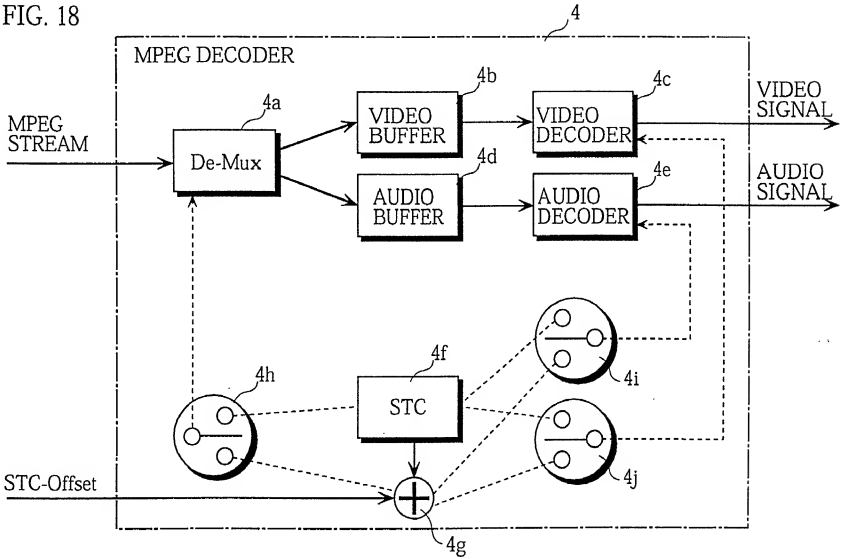
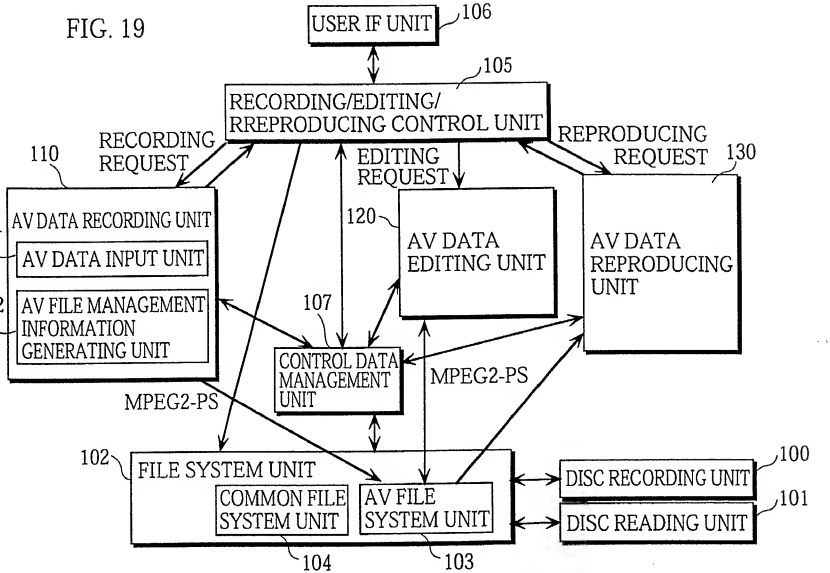

4
MPEG DECODER
MPEG STREAM
4a
De-Mux
4b
VIDEO BUFFER
4c
VIDEO DECODER
VIDEO SIGNAL
4d
AUDIO BUFFER
4e
AUDIO DECODER
AUDIO SIGNAL
4f
STC
4h
4i
4j
STC-Offset
4g

FIG. 19


USER IF UNIT
106
105
RECORDING/EDITING/
RREPRODUCING CONTROL UNIT
RECORDING
REQUEST
110
EDITING
REQUEST
REPRODUCING
REQUEST
130
111
AV DATA RECORDING UNIT
AV DATA INPUT UNIT
112
AV FILE MANAGEMENT
INFORMATION
GENERATING UNIT
120
AV DATA
EDITING UNIT
AV DATA
REPRODUCING
UNIT
107
CONTROL DATA
MANAGEMENT
UNIT
MPEG2-PS
MPEG2-PS
102
FILE SYSTEM UNIT
COMMON FILE
SYSTEM UNIT
AV FILE
SYSTEM UNIT
104
103
DISC RECORDING UNIT
100
DISC READING UNIT
101

TOHZ0' 60607660

FIG. 20

COMMON FILE SYSTEM UNIT 104	
CREATE	GENERATE A FILE
DELTE	DELETE A FILE
OPEN	OPEN A FILE
CLOSE	CLOSE A FILE
WRITE	WRITE A NON-AV FILE
READ	READ A FILE(COMMON TO AV AND NON-AV)
SEEK	MOVE INSIDE A DATA STREAM
RENAME	CHANGE A FILE NAME
MKDIR	GENERATE A DIRECTORY
RMDIR	REMOVE A DIRECTORY
STATFS	OBTAIN A FILE SYSTEM STATE
GET-ATTR	OBTAIN A FILE ATTRIBUTE
SET-ATTR	SET A FILE ATTRIBUTE
SEARCH_DISCON	DETECT WHETHER A SPECIFIED SECTION INCLUDES A DISCONTINUOUS BOUNDARY(ZONE BOUNDARY)

AV FILE SYSTEM UNIT 103	
MERGE	MERGE OF AVFILE1+BUFFER+AV FILE2
SPLIT	SPLIT AN AV FILE
SHORTEN	DELETE AN EDGE OF AV FILE
REPLACE	REPLACE A PART OF AV FILE

FIG. 21

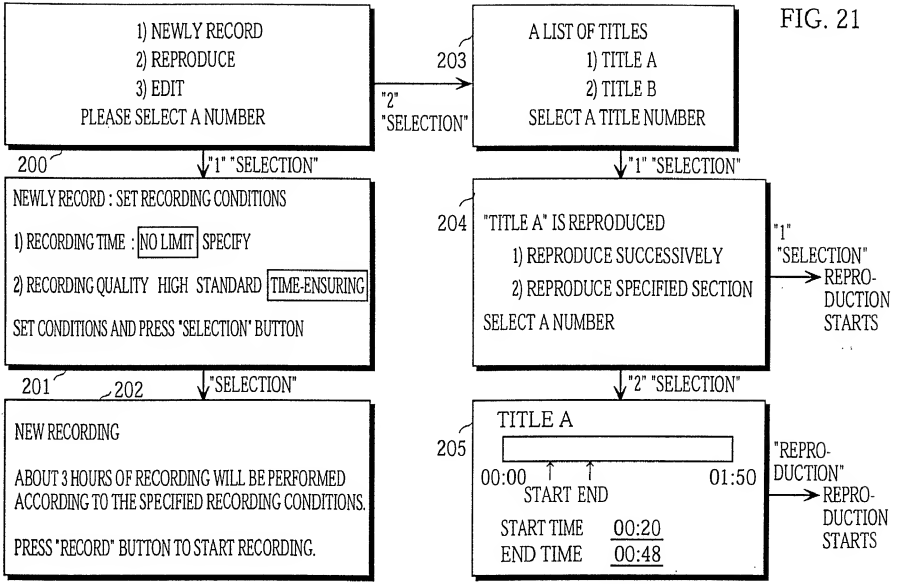
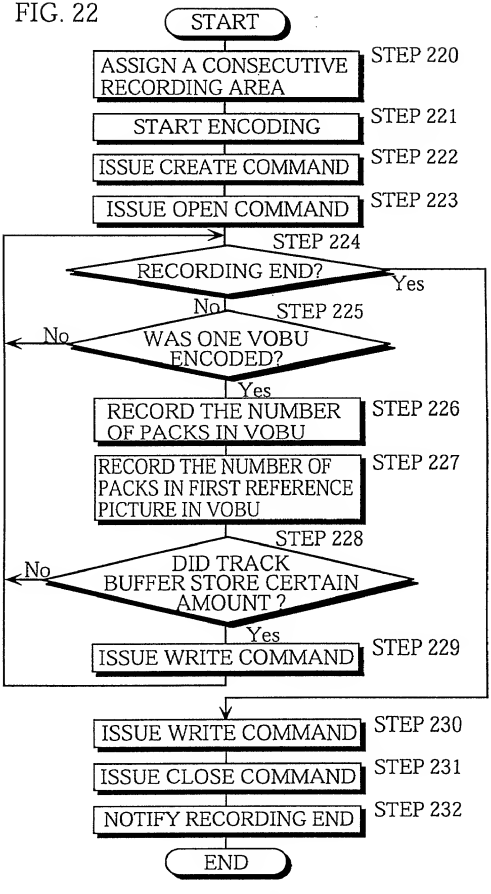

1) NEWLY RECORD
2) REPRODUCE
3) EDIT
PLEASE SELECT A NUMBER
203
"2" "SELECTION"
A LIST OF TITLES
1) TITLE A
2) TITLE B
SELECT A TITLE NUMBER
200
"1" "SELECTION"
"1" "SELECTION"
NEWLY RECORD : SET RECORDING CONDITIONS
1) RECORDING TIME : NO LIMIT SPECIFY
2) RECORDING QUALITY HIGH STANDARD TIME-ENSURING
SET CONDITIONS AND PRESS "SELECTION" BUTTON
204
"TITLE A" IS REPRODUCED
1) REPRODUCE SUCCESSIVELY
2) REPRODUCE SPECIFIED SECTION
SELECT A NUMBER
"1" "SELECTION"
REPRO-DUCTION STARTS
201
202
"SELECTION"
"2" "SELECTION"
NEW RECORDING
ABOUT 3 HOURS OF RECORDING WILL BE PERFORMED ACCORDING TO THE SPECIFIED RECORDING CONDITIONS.
PRESS "RECORD" BUTTON TO START RECORDING.
205
TITLE A
00:00
START
END
01:50
START TIME 00:20
END TIME 00:48
"REPRO-DUCTION"
REPRO-DUCTION STARTS

FIG. 22



EP 0 720 170 A1 960703

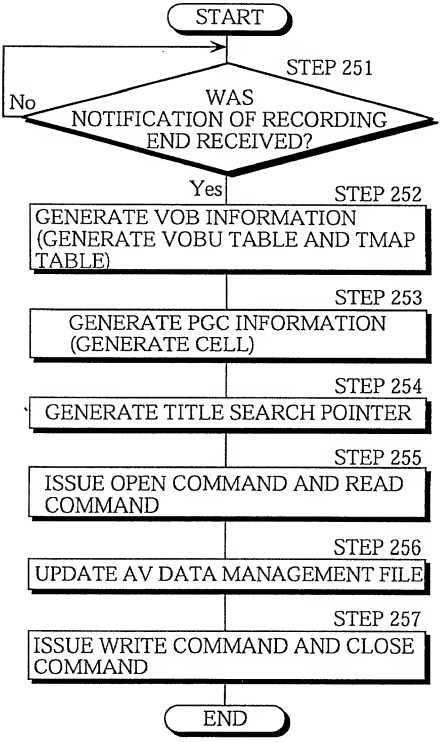
FIG. 23

VOBU NO.	NUMBER OF PACKS IN FIRST REFERENCE PICTURE IN VOBU	NUMBER OF PACKS IN VOBU
#1	14	46
#2	15	51
#3	13	49
#4	14	47
#5	14	46
#6	15	51
#7	13	49
#8	14	47
#9	14	46
#10	15	51
#11	13	49
#12	14	47
⋮	⋮	⋮
#21	15	51
#22	13	49
⋮	⋮	⋮

EP 0 782 270 A1 09910909

FIG. 24

PROCESS BY THE AV FILE MANAGEMENT INFORMATION GENERATING UNIT 112



EP 1 670 260 A1

FIG. 25

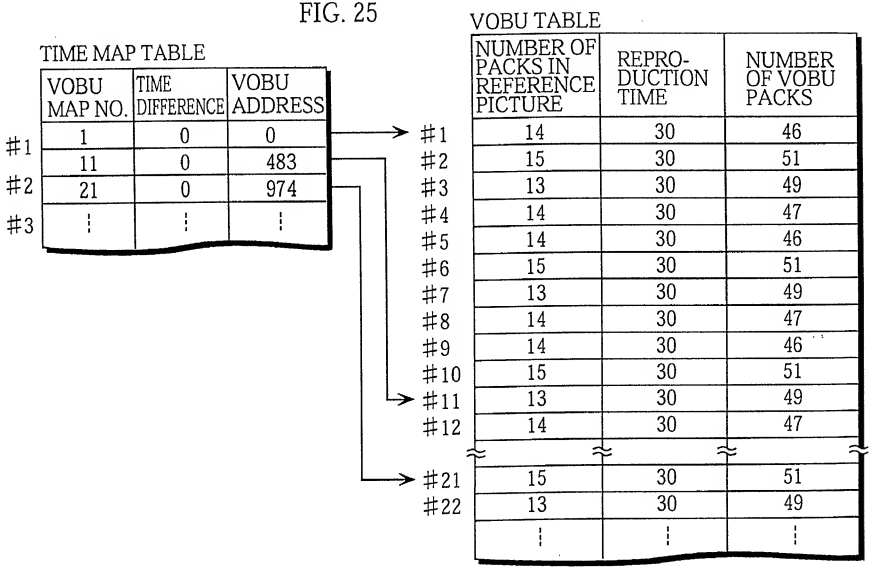

TIME MAP TABLE
VOBU MAP NO.
TIME DIFFERENCE
VOBU ADDRESS
#1
1
0
0
#2
11
0
483
#3
21
0
974
VOBU TABLE
NUMBER OF PACKS IN REFERENCE PICTURE
REPRO-DUCTION TIME
NUMBER OF VOBU PACKS
#1
14
30
46
#2
15
30
51
#3
13
30
49
#4
14
30
47
#5
14
30
46
#6
15
30
51
#7
13
30
49
#8
14
30
47
#9
14
30
46
#10
15
30
51
#11
13
30
49
#12
14
30
47
#21
15
30
51
#22
13
30
49

FIG. 26

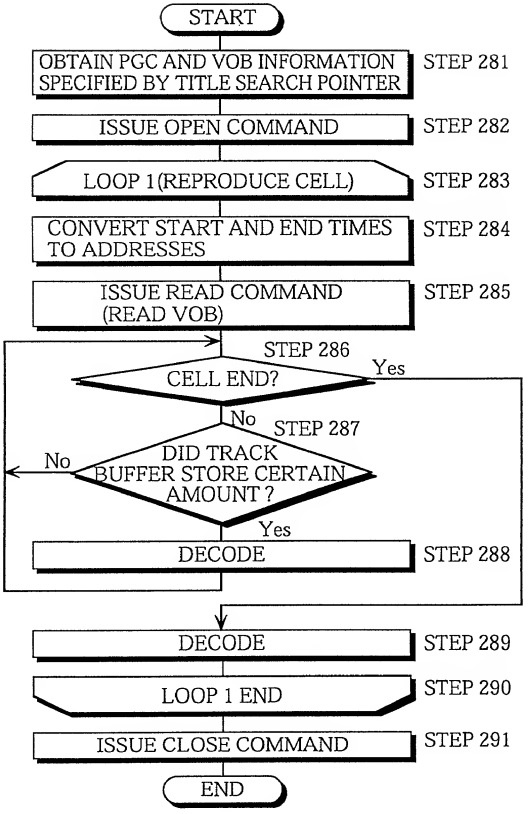


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FIG. 27

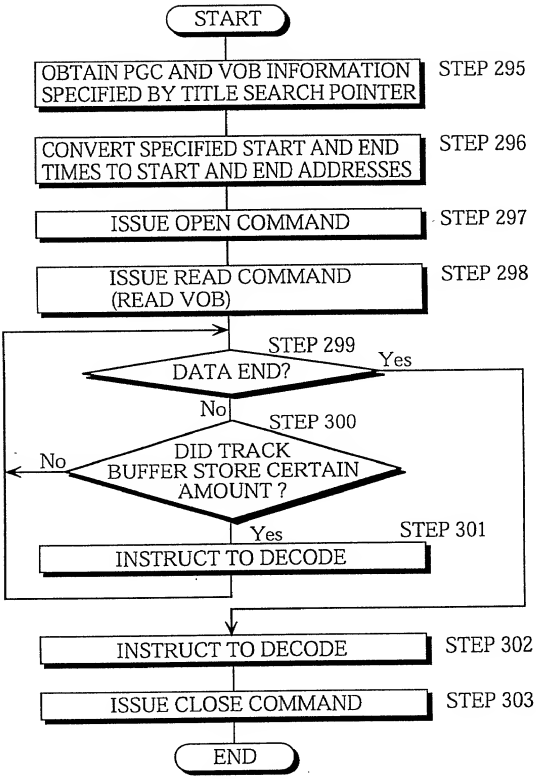

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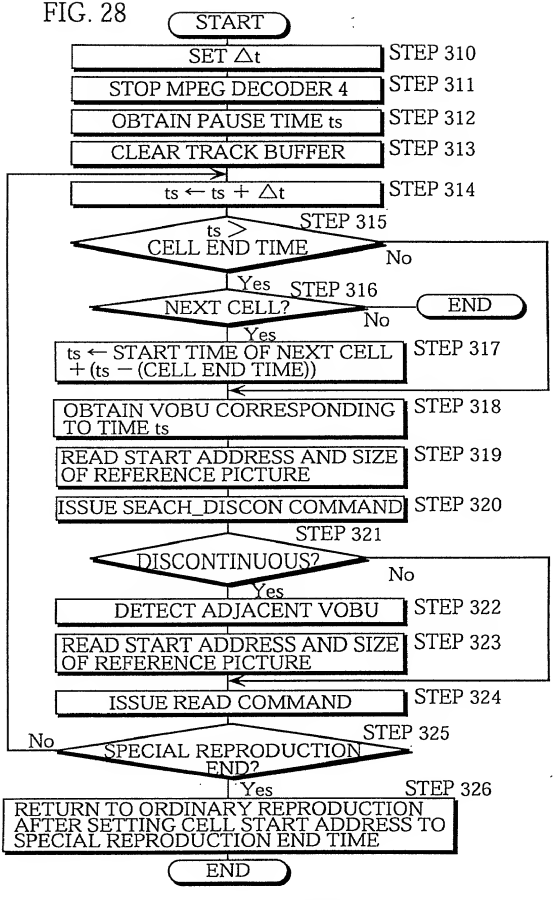
FIG. 28



JP04/07401 09.10.2004